

REMARKS

Reconsideration is requested.

The status of the '904 application referred to in the specification has been updated.

The reference to Fig. 2 of the drawings has also been amended as required.

The applicants affirm their earlier election of the Group I claims. The non-elected claims have been canceled without prejudice. This has included the cancellation of claims 47-50 which are not mentioned in the Examiner's restriction requirement. It is presumed that these claims would be included with the Group II claims. Confirmation is requested.

The election of the Group I claims leaves claims 26-42, 46, 51 and 53-56 in the present case for examination.

The claims have been amended to obviate the basis for the Examiner's Section 112, 2nd ¶ rejection for indefiniteness. The claim changes are shown in the Appendix to this response and it is believed that the Examiner will find the amendments self-explanatory with respect to the manner in which they deal with the Examiner's objections are set forth in Section 9(a)-(h) of the action.

Reconsideration of the Section 112, 2nd ¶ rejection is requested in view of the foregoing.

The Examiner is respectfully requested to reconsider the Section 112, 1st ¶ rejection of claims 26-42, 46, 51 and 53-56 as set forth in Section 7 of the action. The rejection is based on the Examiner's view that the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was

filed, had possession of the claimed invention. However, it is respectfully submitted that the applicants' claims are in fact adequately described in the specification so as to confirm that the applicants were in possession of the invention and disclosed the same when the application was filed.

The Examiner's rejection appear to be largely based on the view that the applicants' disclosure does not teach or provide guidance for selecting an encoding system which would be effective for the applicants' purposes based on the doctrine at page 37 of the present specification. The Examiner's comments appear to be more in the nature of an enablement challenge rather than one directed towards written description. However, with respect, it is submitted that the applicants' disclosure at page 37 teaching the use of an encoding system to identify the sequences carried by beads which have been bound to the target. The applicants' disclosure is clear and specific at page 37 and one of ordinary skill in the art would know which type of encoding system might be preferred for use, i.e. one of the type referred to by the applicants or some other system. The applicants have referred to representative examples of encoding systems and it is evident also that, based on the applicants' disclosure, other types of available encoding systems could be used. In fact, the Examiner mentions that bar codes and nucleic acids were known in the art to be encoding systems and applicants agree. These are covered by the current claims. In fact, applicants disclosed nucleic acids at page 97, line 35 as an encoding system. It is, of course, well recognized that applicants do not need to include everything that is known in the prior art in their specification and in fact, it is preferable not to.

Applicants have described beads and encoding systems in multiple parts of the application, including page 5, lines 15-29, page 38, and pages 74-75, as well as others.

It is respectfully submitted that the applicants' specification addressed to one of ordinary skill in the art, is clear and otherwise sufficient in disclosing the presently claimed invention. The specification, for the reasons indicated, shows that the applicants were in possession of the invention and enabled others to practice the invention to its full extent. Reconsideration of the Section 112, 1st ¶ rejection as set out in Section 7 of the action is, therefore, requested.

The Examiner's comments in the note at the bottom of page 4 of the action have been noted. It is submitted, however, that since the applicants' disclosure is adequate and the same as earlier filed applications, the applicants are entitled to their original disclosure and are not limited to the present filing date as suggested by the Examiner.

The Examiner is also requested to reconsider the Section 112, 1st ¶ rejection of claims 39 and 40 as set out in Section 8 of the action. The subject matter claimed in claims 39 and 40 is supported by the applicants' specification sufficiently to show that the applicants were in possession of the invention of claims 39 and 40 at the time the application was filed. More specifically, it is evident from the applicants' disclosure at, for example, pages 37-38, that beads are representative substrates and that it is contemplated that the reagents may be applied to the beads in any manner described in the application. Beginning at page 74, line 3, the applicants refer to at least four different substrate preparation procedures for treating a surface in order to apply the reagents thereto. These procedures include those referred to in

claims 38 and 40. For example, see page 75 which states that performed polymers can be individually attached at particular sites on the substrate. This, of course, includes beads. That passage also refers to U.S. Patent No. 5,252,743 which describes many methods for attaching polymers to substrates. The fourth method refers specifically to the treatment of beads (or fibers). However, it is evident, in context, that the preparation of beads is not limited to this fourth method. All of the preparation methods are available and this clearly includes the preparations called for in claims 39 and 40. It is submitted that a fair reading of the applicants' disclosure shows that the applicants had the invention called for in claims 39 and 40 when the application was filed. Accordingly, withdrawal of the Section 112, 1st ¶ rejection of these claims is requested.

Reconsideration of the Section 102(b) rejection of claims 26, 37 and 42 based on Mochida is requested. The reference does not disclose the applicants' invention as defined by the claims, particularly as claim 26 has been amended. In particular, Mochida does not show a collection of beads which are different because of the specific sequence attached thereto, the sequences being coded such that an encoding system is able to identify the specific sequence attached to each bead.

The Examiner is also requested to reconsider (1) the Section 102(b)/103(a) rejection of claims 26, 37 and 42 based on Nova et al U.S. 5,751,629. Neither reference discloses or suggests the invention defined by the rejected claims. However, it is also noted that neither Mandecki nor Nova et al are properly cited as references herein. Mandecki has a U.S. filing date of November 30, 1995 while Nova et al have a filing date of either June 7, 1995 or April 25, 1995. All of these dates are after applicants' parent cases Serial No. 08/168,904, filed December 15,

1993 and Serial No. 07/624,114, filed December 6, 1990, from which the present case originates via continuation filings. In other words, the present case has the same disclosure as the earlier filings identified above, thus antedating Mandecki and Nova as references. Furthermore, as noted earlier, even if these patents were properly citable herein, they do not disclose or suggest the applicants' invention. Accordingly, the rejections based on Mandecki and Nova et al should be withdrawn.

Reconsideration of the double-patenting rejection of claims 26-42, 46 and 53-56 based on the combination of Serial No. 09/362,089 and U.S. Patent 5,800,992 is requested. It is believed inappropriate for the Examiner to combine the claims of Serial No. 09/362,089 with the disclosure of the Fodor et al patent. Double-patenting has to be determined on the basis of claim similarity.

By the Examiner's admission, the present claims, which are drawn to a collection of beads, are different from the assay claims of Serial No. 09/362,089. Clearly, the respective sets of claims are fundamentally different from each other.

Furthermore, it is inappropriate for the Examiner to use the applicants' own disclosure in Fodor et al to support the double-patenting rejection. The Examiner must look at the claims and the claims of the present case are not only fundamentally different from the claims of Serial No. 09/362,089 but also substantively different from the claims of the Fodor et al patent. Accordingly, the double-patenting rejection should be withdrawn.

All issues having been addressed, it is submitted that the present case is in allowable condition. Accordingly, allowance is requested.

Respectfully submitted,

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APPENDIX

Version with Markings to Show Changes Made

IN THE SPECIFICATION

Page 1, 1st ¶ of the substitute specification, has been amended as follows:

This is a continuation of Appln. No. 09/362,089, filed July 28, 1998, pending; which is a divisional of Appln. No. 09/056,927, filed April 8, 1998, [pending] now U.S. Pat. No. 6,197,506; which is a continuation of Appln. No. 08/670,118, filed June 25, 1996, now U.S. Pat. No. 5,800,992; which is a divisional of Appln. No. 08/168,904, filed December 15, 1993, now abandoned; which is a continuation of Appln. No. 07/624,114, filed December 6, 1990, now abandoned; which is a continuation-in-part of commonly assigned Appln. No. 07/492,462, filed March 7, 1990, now U.S. Pat. No. 5,143,854; and Appln. No. 07/362,901, filed June 7, 1989, now abandoned, which are hereby incorporated by reference.

Page 8, line 18, the paragraph has been changed as follows:

Fig. [2 illustrates] 2A - 2M illustrate the proper function of a VLSIPS™ Technology nucleotide synthesis.

IN THE CLAIMS

Claims 43-45, 47-50, 52 and 57-69 have been canceled.

The claims have been amended as follows:

26. (Amended) A collection of beads [comprised of different] comprising a plurality of beads [; wherein a plurality of the beads have at least one] which have polymers of [a] different specific sequence attached thereto; [and wherein a plurality of the beads having at least one attached polymer are] said bead being coded [by] with an encoding system [and, the encoding system indicates] whereby the specific sequence of the polymer attached to [a single] the beads can be identified.

27. (Amended) The collection of claim 26, wherein the polymer [attached to a single bead] is an oligonucleotide having a given length[;] and [wherein the oligonucleotide attached to a single bead] is selected from the group consisting of all possible oligonucleotide sequences having the same number of nucleotides.

28. (Amended) The collection of claim 27, wherein at le-ast about 20% of all possible oligonucleotide sequences having the same number of nucleotides are each attached to a different single bead.

29. (Amended) The collection of claim 27, wherein at least about 70% of all possible oligonucleotide sequences having the same number of nucleotides are each attached to a different single bead.

34. (Amended) The collection of claim 27, wherein at least 10,000 of all the possible oligonucleotide sequences having the same number of nucleotides are each attached to a different single bead.

35. (Amended) The collection of claim 27, wherein at least 100,000 of all the possible oligonucleotide sequences having the same number of nucleotides are each attached to a different single bead.

36. (Amended) The collection of claim 27, wherein at least 1,000,000 of all the possible oligonucleotide sequences having the same number of nucleotides are each attached to a different single bead.

38. (Amended) The collection of claim 26, wherein the polymer is a protein selected from the group consisting of proteins having enzyme binding sites and proteins having antibody binding sites.

39. (Amended) The collection of claim 26, wherein [a plurality of] the beads are comprised of a glass surface [and amines of poly-aminopropyltriethoxysilane thereon,] and the polymers are attached through amines on the glass surface.

40. (Amended) The collection of claim 26, wherein the [a plurality of] beads are comprised of a surface [and hydroxyl groups of an acrylic acid polymer thereon] and the polymers are attached through hydroxyl groups on the surface.

41. (Amended) The collection of claim 26, wherein the polymers are oligodeoxyribonucleotides, a plurality of [a] the beads are comprised of a surface and a coating of an organic hydrophilic layer terminating in hydroxyl groups, and

phosphates of the oligodeoxyribonucleotides are immediately linked to the hydroxyl groups.

51. (Amended) The collection of claim 26, wherein the polymer is selected from the group consisting of proteins having enzyme binding sites and proteins having antibody binding sites.

55. (Amended) The collection of claim 27, wherein a plurality of the different beads are reusable; thereby allowing specific interactions between the polymer attached to a single bead and its target to be disrupted[,] and the single bead treated, whereby a renewed plurality of beads equivalent to an unused plurality of beads is made by such treatment.